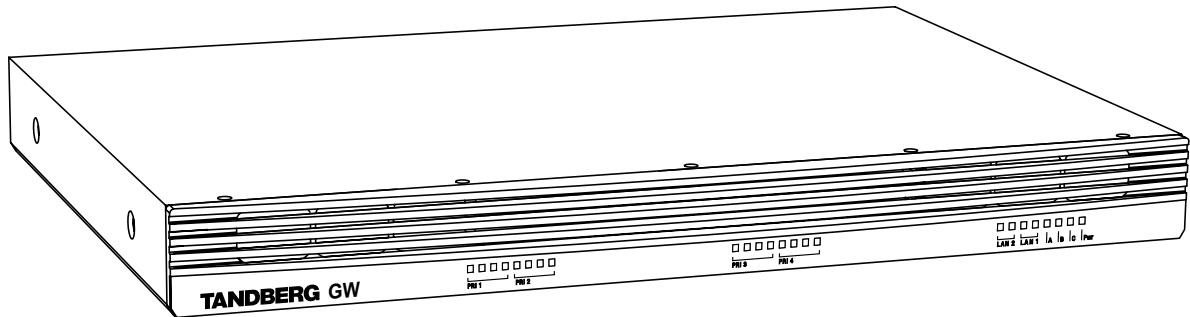


TANDBERG Gateway

User Manual



Software version G2

D13187-02

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Environmental Issues

Thank you for buying a product which contributes to a reduction in pollution and thereby helps save the environment.

Our products reduce the need for travel and transport and thereby reduce pollution.

Our products have either no or few consumable parts (chemicals, toner, gas, paper).

Our products are low energy consuming products.

Waste handling:

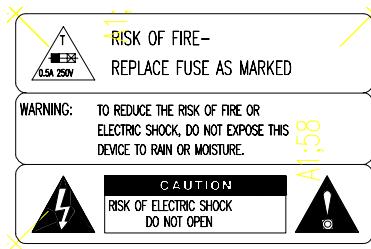
There is need to send material back to TANDBERG. Please contact your local dealer for information on recycling the product by sending the main parts of the product for disassembly at local electronic waste stations.

Production of products:

Our factories employ the most efficient environmental methods for reducing waste and pollution by ensuring that the products are recyclable.

Operator Safety Summary

For your protection, please read these safety instructions completely before operating the equipment and keep this manual for future reference. The information in this summary is intended for operators. Carefully observe all warnings, precautions and instructions both on the apparatus and in the operating instructions.



Equipment Markings

The lightning flash symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltages" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock.

The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions within literature accompanying the equipment.

Warnings

Water and moisture - Do not operate the equipment under or near water - for example near a bathtub, kitchen sink, or laundry tub, in a wet basement, near a swimming pool or in areas with high humidity.

Cleaning - Unplug the apparatus from the wall outlet before cleaning or polishing. Do not use liquid cleaners or aerosol cleaners. Use a lint-free cloth lightly moistened with water for cleaning the exterior of the apparatus.

Ventilation - Do not block any of the ventilation openings of the apparatus. Install in accordance with the installation instructions. Never cover the slots and openings with a cloth or other material. Never install the apparatus near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Grounding or Polarization - Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician.

Power-Cord Protection - Route the power cord so as to avoid it being walked on or pinched by items placed upon or against it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the apparatus.

Attachments - Only use attachments as recommended by the manufacturer.



Accessories - Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Lightning - Unplug this apparatus during lightning storms or when unused for long periods of time.

ISDN cables - CAUTION - To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

Servicing - Do not attempt to service the apparatus yourself as opening or removing covers may expose you to dangerous voltages or other hazards, and will void the warranty. Refer all servicing to qualified service personnel.

Damaged Equipment - Unplug the apparatus from the outlet and refer servicing to qualified personnel under the following conditions:

When the power cord or plug is damaged or frayed

If liquid has been spilled or objects have fallen into the apparatus

If the apparatus has been exposed to rain or moisture

If the apparatus has been subjected to excessive shock by being dropped, or the cabinet has been damaged

If the apparatus fails to operate in accordance with the operating instructions

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NOTE IMPORTANT
PLEASE READ THIS
SECTION
CAREFULLY FOR
OPTIMAL SYSTEM
SET-UP.

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Introduction

This User Manual is provided to help you make the best use of your TANDBERG Gateway. The gateway enables sites on IP and sites on ISDN to participate in meetings with each other, and at the same time it offers superior quality and ease of use in one fully-featured gateway (GW).

Main Features:

- Flexible ISDN Dial-in Services - Direct Inward Dialing (DID), Interactive Voice Response (IVR), Terminal Control Session 4 (TCS-4) and Hotline/Operator Mode.
- Flexible IP Dial-out Services - Downspeeding^{TF}, Service Prefix and Load balance.
- Up to 8 video sites and 8 telephony calls can be supported at the same time, each benefiting from the same superb audio and video quality, and full featured TANDBERG functionality.
- Call rate of up to 2 Mbps for each call is supported through the gateway.
- A maximum of 4 Mbps (2 Mbps standard) ISDN bandwidth is supported through the gateway.
- Secure Conference^{TF} - using standard based AES 128 and DES encryption.
- Superb video quality supporting the new ITU video standard H.264.
- Dual Stream - support for Duo Video^{TF} on both ISDN and IP, and People+Content on ISDN.
- Full H.243 Multipoint Control Unit (MCU) Transparency, for seamless MCU connection through the gateway.
- Secure Access - support XML/SOAP over HTTPS, Web (HTTP) encrypted password and the services Telnet, FTP, HTTP, HTTPS and SNMP can be disabled.
- Web-interface for system management, call management such as call transfer, diagnostics and software uploads.
- Worldwide compatibility with standards-based videoconferencing systems.

Options:

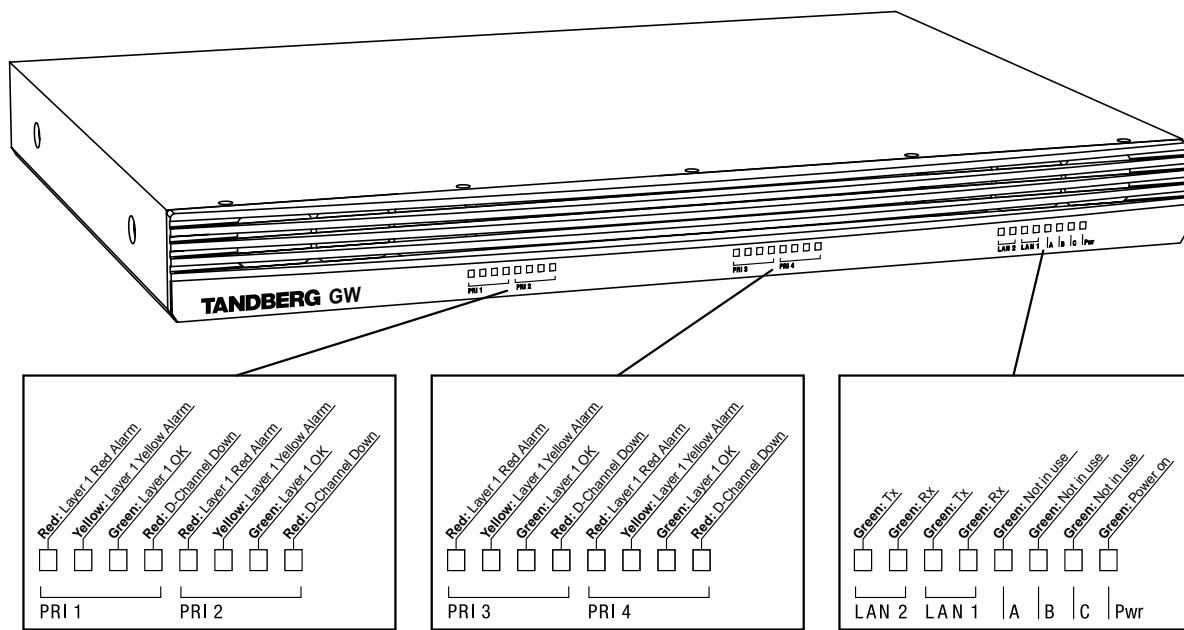
- Management using TANDBERG Management Suite.
- Scheduling using TANDBERG Scheduler. Simplifies scheduling and the use of video meeting resources through highly automated functionality.

TIP HELPFUL TIPS AND NOTES WILL APPEAR LIKE THIS.

The TANDBERG Gateway

Front view

The front of the gateway contains 24 Light Emitting Diodes (LEDs) organized in three groups. These diodes provide information about PRI-line status, LAN (Ethernet) connection and power.

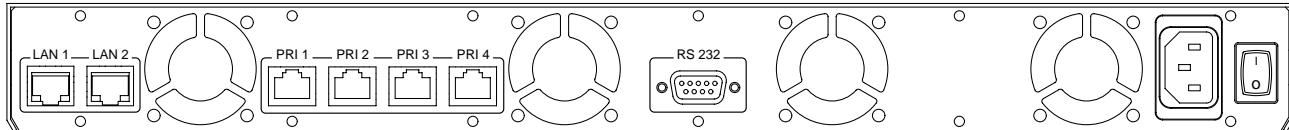


Red Alarm or Loss of signal (LOS) indicates that there is no signal and thus no framing info received. The same effect will be obtained by pulling out the PRI cable. This may also be caused by a broken connector in the receive (RX) part of the cable.

Yellow Alarm or Remote Alarm Indicator (RAI) means that the gateway is receiving framing info, but in this framing info the other side tells the gateway that it is not reading the gateway's transmitted framing info. Typically, this may be a broken connector in the transmit (TX) part of the PRI cable. This could also indicate weak or noisy signal in the transmit (TX) part of the PRI cable.

Rear view

The back panel provides four PRI interfaces, two LAN interfaces and one RS 232 interface located together with the power switch/connector and four cooling fans.



NOTE THE 'LAN 2' CONNECTOR IS NOT USED.

GATEWAY Capacity – typical scenarios (4 Mbps option)

Below is an overview of the number of video calls possible to connect on different bandwidths, when 2xE1 (or 3xT1) PRI ISDN lines are connected. In addition to the video calls, telephone calls can also be made through the gateway.

Bandwidth	Non-encrypted	Encrypted
128 kbps	8+8*	7+0
256 kbps	8+7	6+5**
384 kbps	8+4	5+5
512 kbps	7+4	5+0
768 kbps	5+0	3+8
1472 kbps (1.5 Mbps)	2+8	N/A
1920 kbps (2 Mbps)	2+0	N/A

* 8+8 indicates 8 video calls and 8 telephone calls.

** 6+5 indicates 6 encrypted video calls and 5 unencrypted telephone calls.

TIP FOR MORE DETAILS ON CAPACITY, SEE 'APPENDIX 3: CAPACITY'

Installation

Precautions

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninstalled telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- The socket outlet shall be installed near to the equipment and shall be easily accessible.
- Never install cables without first switching the power OFF.
- This product complies with directives: LVD 73/23/EC, EMC 89/366/EEC, R&TTE 99/5/EEC.
- This product complies with the standards GR-63-CORE and GR-1089-CORE and is NEBS approved by UL .For NEBS compliance, the product should be installed in the following manner:
 - Use the enclosed rack brackets marked "NEBS".
 - There should be a clearance of 9.1cm between the product and any other product mounted in the rack.

Unpacking

To avoid damage to the unit during transportation, the gateway is delivered in a special shipping box, which should contain the following components:

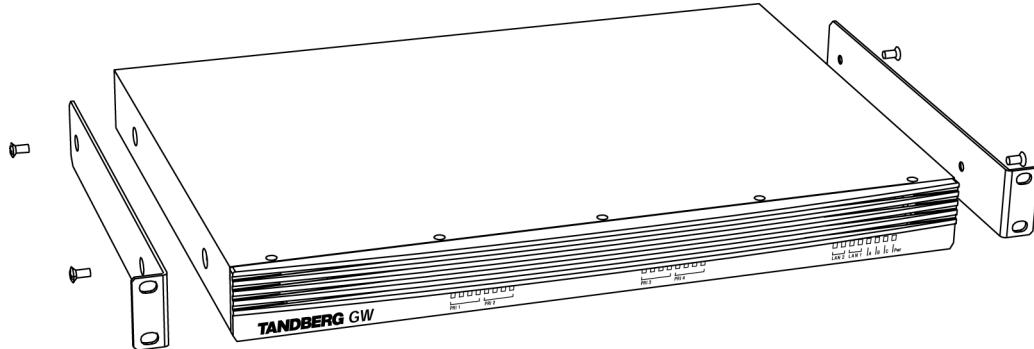
- TANDBERG GW.
- User Manual and other documentation on CD.
- Rack-ears, screws and screwdriver.
- Cables:
 - Power cable
 - Four ISDN PRI cables
 - Ethernet cable
 - RS232 cable

Installation site preparations

- Make sure that the gateway is accessible and that all cables can be easily connected.
- For ventilation: Leave a space of at least 10cm (4 inches) behind the gateway's rear panel and 10cm (4 inches) in front of the front panel.
- The room in which you install the gateway should have an ambient temperature between 0°C and 35°C (32°F and 95°F) and between 10% and 90% non-condensing relative humidity.
- Do not place heavy objects directly on top of the gateway.
- Do not place hot objects directly on top, or directly beneath the gateway.
- Use a grounded AC power outlet for the gateway.
- You will need a CSU (Channel Service Unit) between your system and the PRI line from your network provider.

Rack Mounting (optional)

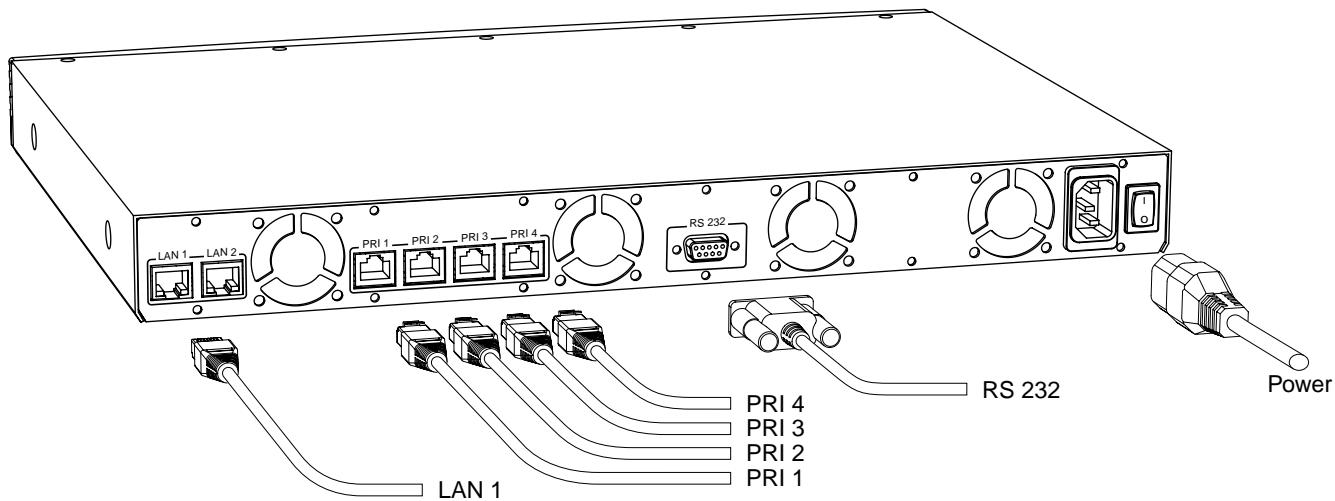
The gateway comes with brackets for mounting in standard 19" racks.



NOTE BEFORE STARTING THE RACK MOUNTING, PLEASE MAKE SURE THE TANDBERG GW IS PLACED SECURELY ON A HARD, FLAT SURFACE.

1. Disconnect the AC power cable.
2. Make sure that the mounting space is according to the 'Installation site preparations' (see above).
3. Attach the brackets to the gateway on both sides of the unit.
4. Insert the gateway into a 19" rack, and secure with screws in the front (four screws).

Connecting cables



Power cable

Connect the system power cable to an electrical distribution socket.

ISDN PRI cables

For each of the four PRI interfaces, the E1/T1 cable should be connected to a CSU (Channel Service Unit). You will need a CSU between your gateway and the PRI line from your network provider.

LAN cable

To use the gateway on IP, connect a LAN cable from the 'LAN 1' connector on the gateway to your network. The 'LAN 2' connector is not used and should be left open.

RS 232 cable

To control the gateway using the dataport, connect an RS 232 cable between the gateway's RS 232 connector and the COM-port on a PC. For further information, please refer to the 'Dataport' chapter in 'Configure the Gateway'.

Gateway Configuration

The gateway requires some basic configurations before it can be used. It will be necessary to find the IP-address and program the ISDN-PRI Line numbers.

To do this configuration, follow the instructions below:

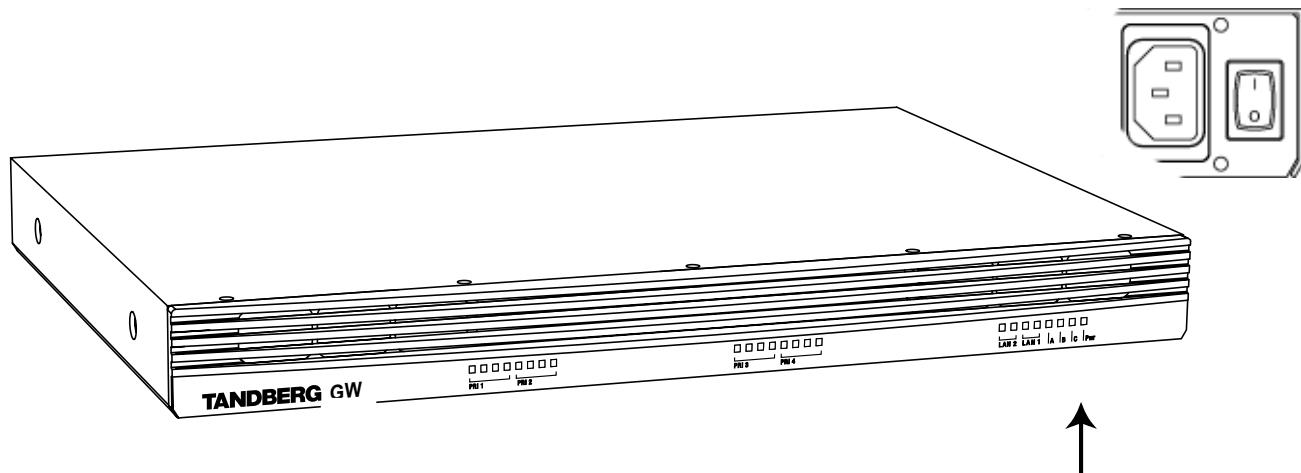
1. Connect the RS232 cable between the gateway and a PC and then switch on the gateway.
2. Start a terminal program on the PC and configure it to: 9600, 8, 1, None.
- 3a. To assign a static IP-address, type 'ipassign static' and 'ipaddress 1 static <IP-address>'.
- 3b. To assign an IP Subnetmask, type 'ipaddress 1 subnetmask <subnetmask>'.
- 3c. To assign an IP Gateway address, type 'ipaddress 1 gateway <gateway IP-address>'.
4. Restart the gateway.

TIP DHCP ASSIGNED IP-ADDRESSES ARE SUPPORTED BY THE TANDBERG GATEWAY (FACTORY DEFAULT).

5. Start a WEB browser and enter the IP-address of the gateway. Default password: 'TANDBERG'.
6. To configure the gateway for ISDN dial in, enter PRI numbers and dial in number(s). For details, see the 'PRI Configuration' and the 'ISDN Dial in Configuration' section.
7. To configure the gateway for IP dial in, register the gateway to a gatekeeper and enter H.323 services. For details, see the 'H.323 Services' and 'H.323 Configuration' sections.

Gateway start-up

To start the gateway, please make sure that the power cable is connected, and press the power switch button to '1'.



On the front panel of the system the power indicator LED, marked 'Pwr', will now turn GREEN.

Accessing the gateway

You may access the gateway by entering the IP-address of the gateway in a standard WEB-browser. You will then be asked to enter a password. It is not necessary to enter 'User Name'. The default password for the gateway is '**TANDBERG**'. Remember that the password is case sensitive.

**TIP**

IF YOU DO NOT KNOW THE IP-ADDRESS, PLEASE FOLLOW THE PROCEDURE IN 'INSTALLATION', 'SYSTEM CONFIGURATION'.

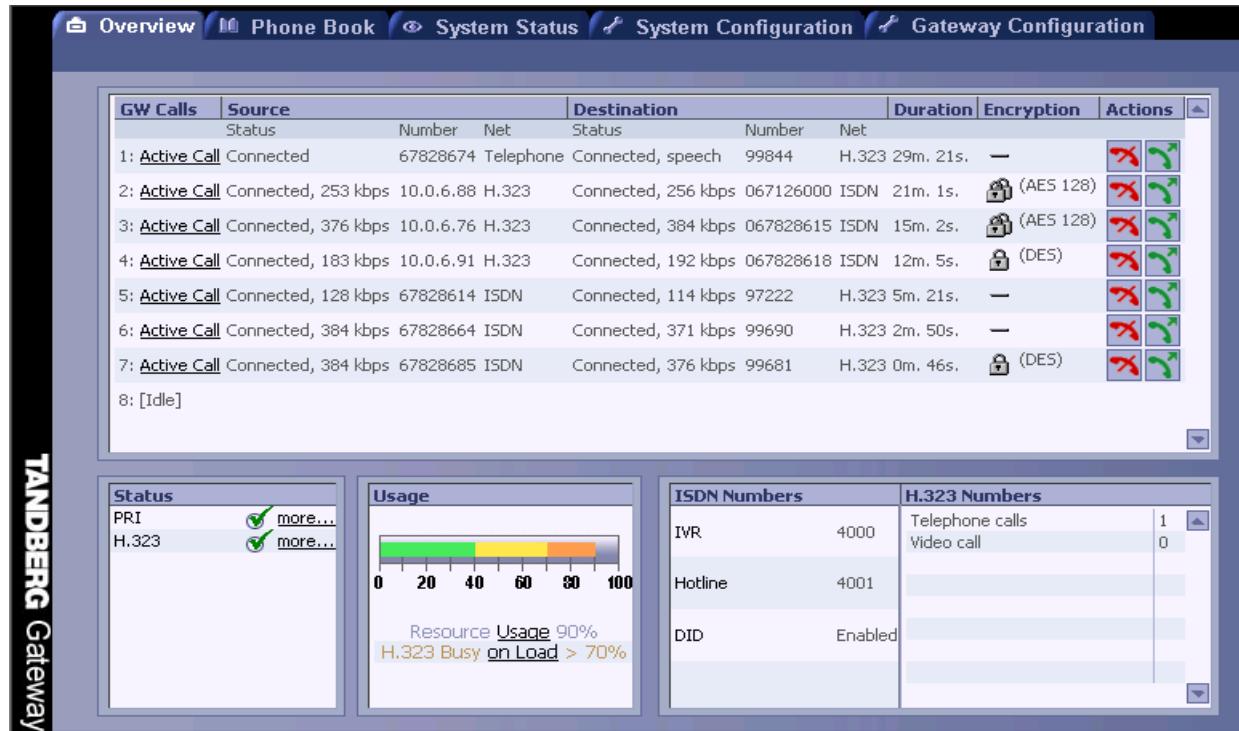
TIP

THE PASSWORD CAN BE CHANGED IN 'SYSTEM CONFIGURATION', 'MISC'. SEE ALSO THE 'CONFIGURE MISCELLANEOUS PARAMETERS' SECTION IN 'CONFIGURE THE GATEWAY'.

Using the Gateway

Call Overview

The following Web-page, called '**Overview**' will be shown when the correct password has been entered and shows all calls currently active through the gateway.



The screenshot shows the 'Overview' page of the TANDBERG Gateway. The top navigation bar includes links for Overview, Phone Book, System Status, System Configuration, and Gateway Configuration. The main content area is divided into several sections:

- GW Calls:** A table listing 8 active calls. Each row shows a call identifier, status, source (Number and Net), destination (Number and Net), duration, encryption type (AES 128 or DES), and action buttons (red and green icons). The calls are:
 - 1: Active Call Connected, 67828674 Telephone
 - 2: Active Call Connected, 253 kbps 10.0.6.88 H.323
 - 3: Active Call Connected, 376 kbps 10.0.6.76 H.323
 - 4: Active Call Connected, 183 kbps 10.0.6.91 H.323
 - 5: Active Call Connected, 128 kbps 67828614 ISDN
 - 6: Active Call Connected, 384 kbps 67828664 ISDN
 - 7: Active Call Connected, 384 kbps 67828685 ISDN
 - 8: [Idle]
- Status:** Displays PRI and H.323 status with 'more...' buttons.
- Usage:** A chart showing resource usage at 90% with a warning: 'H.323 Busy on Load > 70%'.
- ISDN Numbers:** A table with entries for IVR (4000), Hotline (4001), and DID (Enabled).
- H.323 Numbers:** A table with entries for Telephone calls (1) and Video call (0).

GW Calls

Shows each active call through the gateway.

[Idle] No call is active.

Active Call A call is active. Click on Active Call to see call info in details.

Source

Shows the Status of the incoming call to the gateway, the Number and which Network the incoming call is using.

Idle	No active call, call just been disconnected.
Alerting	Call is being connected.
Connected	Call is connected.
Clear out	Call is being disconnected.
Number	ISDN or IP number.
ISDN	Call connected is using the H.320 protocol over ISDN.
IP/H.323	Call connected is using the H.323 protocol over IP.

Destination

Shows the Status of the outgoing call from the gateway, the Number and which Network the call is using.

Idle	No active call, call just been disconnected.
Establ out	Gateway is calling out to destination.
Alerting	Call is being connected.
Connected	Call is connected.
Clear out	Call is being disconnected.
Number	ISDN or IP number.
ISDN	Call connected is using the H.320 protocol over ISDN.
IP/H.323	Call connected is using the H.323 protocol over IP.

Duration

Shows the length of the current call.

Encryption (Secure conference^{TF})

The gateway supports Secure Conference DES and AES.



The single padlock symbol indicates that DES (56 bit) encryption is used.



The double padlock symbol indicates that AES (128 bit) encryption is used.



— Indicates that the call is not encrypted.

NOTE ENABLING ENCRYPTION WILL REDUCE THE CAPACITY OF THE GATEWAY.

Actions

When a call is active, the Administrator or Operator has the possibility to disconnect the call, or transfer the call from one IP endpoint to another.

Disconnect Gateway Call



Will disconnect the selected gateway call. A confirmation window will be shown.

Call Transfer



Will open the H.323 Call Transfer window. Here the Administrator or Operator can select an IP entry from the Phone Book or enter a H.323 Alias/IP address and transfer the H.323 (IP) call to another IP endpoint. If the transfer fails, the call will be disconnected.

Status

Shows current status on the PRI and IP status.

PRI:

-  Minimum one PRI line is synced and active. Click on [More...](#) to see status in detail.
-  No PRI lines are active. Click on [More...](#) to see status in detail.

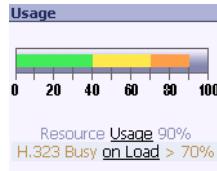
IP/H.323:

-  The gateway is registered with a Gatekeeper. Click on [More...](#) to see status in detail.
-  The gateway is not registered with a Gatekeeper. Click on [More...](#) to see status in detail.

Usage

The usage bar shows the current status of all the available resources (CPU, ISDN channels and number of calls)

When the Resource Usage reaches the “Busy on Load”-limit, the gateway will try to route outgoing IP calls to other gateways. This is done to maintain availability for incoming ISDN calls when using multiple gateways.



Resource [Usage](#) 90%. Click on [Usage](#) to see resource usage in detail.

H.323 Busy [on Load](#) > 70%. Click on [on Load](#) to adjust the value.

ISDN Numbers

Shows the available ISDN dial-in numbers for IVR, TCS-4, DID and Hotline.

TIP FOR MORE INFO ABOUT IVR, HOTLINE OR DID, PLEASE READ THE ‘DIAL FROM ISDN’ SECTION IN ‘USING THE GATEWAY’.

H.323 Numbers

Shows the available H.323 Services (dial-out prefixes) for accessing/dialing the ISDN network.

TIP FOR MORE INFO ABOUT H.323 SERVICES, PLEASE READ THE ‘DIAL FROM IP’ SECTION IN ‘USING THE GATEWAY’.

Dial from ISDN

The gateway supports four different ISDN Dial In services:

- IVR
- IVR + TCS4
- DID
- Hotline

TIP

FOR MORE DETAILS ON ISDN DIAL IN SERVICES, SEE 'ISDN DIAL IN CONFIGURATION' UNDER 'CONFIGURE THE GATEWAY'.

Any of these services can be enabled or disabled, but at least one must be enabled for incoming call routing to take place.

In order to enable parallel incoming calls, a PRI number range must be defined.

IVR

Interactive Voice Response (IVR), also called extention dial-in, is an automated answering system that directs the call to the IP endpoint indicated by the caller. The caller uses telephone tones (DTMF) to enter the H.323 Alias or extention.

IVR is useful if you have limited PRI numbers on your PRI line.

Example:

- A videoconferencing system calls into the Extention Dial In number with IVR active.
- The gateway activates the 'Welcome' picture and sound.
- The videoconferencing system enters the extention (H.323 Alias) followed by the # (pound-sign) to indicate end of number.
- The gateway starts to call the IP endpoint and the "Call proceeding" picture and sound are activated.
- When the call is connected audio and video are transmitted through the gateway.

**TIP**

THE WELCOME PICTURE AND SOUND CAN BE CHANGED IN THE 'FILE MANAGEMENT' SECTION IN 'CONFIGURE THE GATEWAY'.

IVR + TCS-4

IVR + Terminal Control Session 4 (TCS-4) is an extention dial-in method that combines IVR with TCS-4. In this mode the extention number can be indicated with telephone tones (DTMF) or TCS-4 signaling.

TCS-4 allow an ISDN based videoconferencing endpoint to dial an IP endpoint directly, without having to go through the same procedure as for IVR. If no TCS-4 extention is given from the endpoint, then IVR will be used.

To use TCS-4, it needs to be supported by the videoconferencing endpoint. Refer to the User Manual of the videoconferencing endpoint to see how TCS-4 is supported.

Example:

- A videoconferencing endpoint calls into the Extention Dial In number with IVR + TCS-4 active, using <Extention Dial In number of gateway><*><party's extention>.
- The gateway starts to call the IP endpoint and the “Call proceeding” picture and sound are activated.
- When the call is connected audio and video are transmitted through the gateway.

NOTE THE ‘*’ IS SPECIFIC TO TANDBERG ENDPOINTS. OTHER VENDORS WILL HAVE DIFFERENT METHODS OF ENTERING THE TCS-4 EXTENTION.

DID

Direct Inward Dialing (DID) will provide you with direct ISDN numbers for your IP endpoints. I.e. it will do a direct mapping between your ISDN number and the H.323 Alias.

In order to use DID you will need to have assigned multiple ISDN numbers to your ISDN PRI line, as each ISDN number will map to a single IP endpoint.

We also recommend that if more than one PRI line is used all PRI lines should have the same numbers (use trunk groups).

Example:

- Your ISDN PRI number range is from 67124000 to 67124050 and DID is enabled.
- You want your IP endpoints to have the numbers (H.323 Alias) in the range 94000 - 94050.
- In the ISDN Dial In Configuration, set ‘No. Significant Digits’ to 4 and ‘Prefix (E.164)’ to 9.
- To call an IP endpoint with H.323 Alias 94020 from ISDN, dial the ISDN number 67124020.
- The gateway starts to call the IP endpoint and the “Call proceeding” picture and sound are activated.
- When the call is connected audio and video are transmitted through the gateway.

Hotline

Hotline is a service that allows incoming ISDN calls on a dedicated ISDN number, to be routed to an IP endpoint. This is useful if you want to have an operator or helpdesk functionality together with DID, IVR and/or TCS-4.

Example:

- Your ISDN PRI number range is from 67124000 to 67124050 and DID is enabled.
- Hotline number assigned is 67124050.
- An operator/helpdesk has got the H.323 Alias (extention) 98660.
- A videoconferencing endpoint calls ISDN number 67124050.
- The gateway starts to call the IP endpoint and the “Call proceeding” picture and sound are activated.
- When the call is connected audio and video are transmitted through the gateway.
- If needed, the Hotline operator can use Call Transfer to transfer the call to another IP endpoint.

Sequence of Services

To ensure best service to the incoming ISDN call, the gateway will first try to match the Hotline number, and then the IVR/TCS-4 number before using DID (if enabled). If DID is disabled and no other number programmed, the call will be routed to the IVR service (if enabled).

Dial from IP

IP endpoints and MCUs can call out through the gateway by using one of the H.323 services defined on the gateway.

H.323 Services

H.323 Service prefixes are used for IP endpoints to access the ISDN network. Up to twenty prefixes can be defined, but we recommend using one single prefix for simplicity.

NOTE DEFAULT H.323 SERVICE FOR OUTGOING VIDEO CALLS IS '0'.
DEFAULT H.323 SERVICE FOR TELEPHONE CALLS IS '1'.

Example:

- A H.323 Service prefix for outgoing video calls is defined as "0" (default).
- The IP endpoint dials 067121212 to dial the ISDN number 67121212.
- The gateway starts to call the ISDN endpoint and the "Call proceeding" picture and sound are activated.
- When the call is connected audio and video are transmitted through the gateway.



NOTE THE BANDWIDTH USED FOR THE CALL WILL BE THE BANDWIDTH SELECTED ON THE IP ENDPOINT.

TIP FOR MORE DETAILS ON H.323 SERVICES, SEE 'H.323 SERVICES' UNDER 'CONFIGURE THE GATEWAY'.

Features

The gateway offers superior audio and video quality as well as:

Encryption (Secure conference^{TF})

Secure conference^{TF} AES (128 bit) and Secure conference^{TF} DES (56 bit) are both supported through the gateway.

Downspeeding^{TF}

When requested quality (bandwidth) cannot be established, a connection is established on as high quality as possible or if channels are dropped during a videoconference, the connection is automatically maintained without interruption.

Dual Streams

Duo Video^{TF} is supported from both ISDN and IP and allows participants at the far end to simultaneously watch a presenter on one screen and a live presentation on the adjoining screen.

In addition, TANDBERG endpoints on IP are able to share Duo Video^{TF} with Polycom's People+ContentTM on ISDN. This requires Polycom endpoint and MCU software version 5.

Digital Clarity^{TF}

Participants enjoy presentations of exceptionally high quality resolution video.

Natural Video^{TF}

60 fields per second true interlaced picture (iCIF).

H.264 support through gateway^{TF}

Superb video quality supporting the new ITU video standard H.264.

Full H.243 Transparency

H.243 Multipoint Control Unit (MCU) Transparency allows seamless MCU control through the gateway.

Far End Camera Control using H.224

Far End Camera Control using H.224 allows seamless Far End Camera control through the gateway.

Intelligent Packet Loss Recovery (IPLR)

If the gateway experiences packet loss from an IP endpoint, it will ask the endpoint to handle packet loss. This requires Intelligent Packet Loss Recovery functionality on the endpoint.

Text Chat (T.140)

Text Chat (T.140) is supported through the gateway.

Secure Access

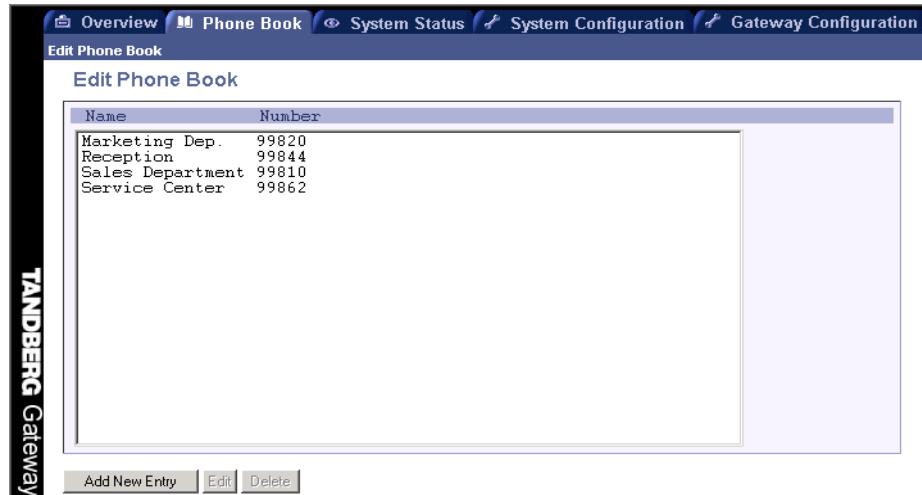
The gateway supports secure management over Web (HTTPS) and XML/SOAP (HTTPS). In addition, it has encrypted password over HTTP and the possibilities to disable the Telnet, FTP, HTTP, HTTPS and SNMP IP services.

- SOAP** Simple Object Access Protocol is a lightweight protocol for exchange of information in a decentralized, distributed environment
- XML** Extensible Markup Language is a flexible way to create common information formats and share both the format and the data on the World Wide Web, intranets, and elsewhere. This functionality can be used by management systems like the TANDBERG Management Suite to control the gateway.
- HTTPS** Hypertext Transfer Protocol over Secure Socket Layer is a Web protocol that encrypts and decrypts user page requests as well as the pages that are returned by the Web server. It uses Secure Socket Layer (SSL) as a sublayer under its regular HTTP application layering. HTTPS uses port 443 instead of HTTP port 80 in its interactions with the lower layer, TCP/IP. SSL uses a 40-bit key size for the RC4 stream encryption algorithm, which is considered an adequate degree of encryption for commercial exchange.

Manage the Phone Book

By selecting the 'Phone Book' tab, you can add new or edit existing Phone Book entries in the gateway.

The Phone Book can be used when Transferring calls from one IP endpoint to another and can contain up to 99 single entries. They are listed alphabetically as can be seen in the figure below.



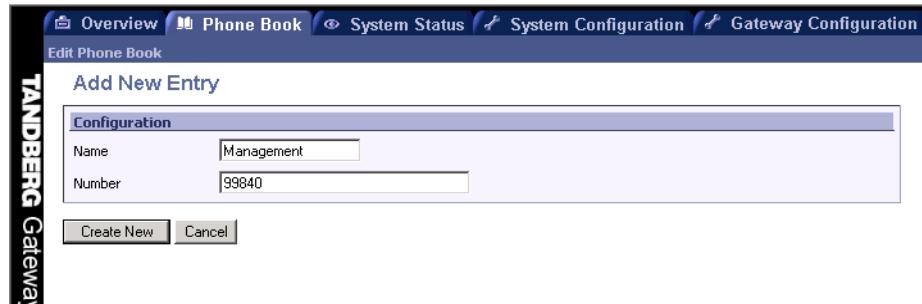
The screenshot shows the 'Edit Phone Book' interface. At the top, there is a navigation bar with tabs: Overview, Phone Book (which is selected and highlighted in blue), System Status, System Configuration, and Gateway Configuration. Below the navigation bar, the title 'Edit Phone Book' is displayed. The main content area is a table with two columns: 'Name' and 'Number'. The entries listed are:

Name	Number
Marketing Dep.	99820
Reception	99844
Sales Department	99810
Service Center	99862

At the bottom of the interface, there are three buttons: 'Add New Entry' (highlighted in blue), 'Edit', and 'Delete'.

Add new entry

To add a new entry in the Phone Book, press the 'Add New Entry' button and the 'Add New Entry' will open, as shown in the figure below.



The screenshot shows the 'Add New Entry' interface. At the top, there is a navigation bar with tabs: Overview, Phone Book (selected), System Status, System Configuration, and Gateway Configuration. Below the navigation bar, the title 'Edit Phone Book' is displayed. The main content area is titled 'Add New Entry'. It contains a form with two fields: 'Name' (with the value 'Management') and 'Number' (with the value '99840'). At the bottom of the form, there are two buttons: 'Create New' (highlighted in blue) and 'Cancel'.

Name Name of the IP endpoint.

Number IP number (E.164 Alias) of the IP endpoint.

Press 'Create New' to save the entry in the phone book.

Edit Entry

By selecting an existing Entry in the Phone Book and then pressing the '**Edit**' button, you will be able to edit the selected entry. The same fields as for the '**Add New Entry**' will be available.

The screenshot shows the 'Edit Entry' page of the TANDBERG Gateway. The top navigation bar includes 'Overview', 'Phone Book' (which is selected), 'System Status', 'System Configuration', and 'Gateway Configuration'. On the left, a vertical sidebar displays the 'TANDBERG' logo and the text 'Edit Phone Book'. The main content area is titled 'Edit Entry' and contains a 'Configuration' section. Inside this section, there are two input fields: 'Name' with the value 'Sales Department' and 'Number' with the value '99810'. At the bottom of the configuration section are three buttons: 'Save', 'Create New', and 'Cancel'.

Save

The entry will be updated with the changes made.

Create New

This will create a new entry instead of replacing the old one. The old entry will still be stored in the Phone Book.

Cancel

Will discard all changes and display the '**Edit Phone Book**' page.

Delete

By selecting an existing Entry in the Phone Book and then pressing the '**Delete**' button, you will delete the selected entry.

View System Status

To view current gateway status, open 'System Status' as shown in the figure below.



PRI Status

To view status of the PRI, open 'PRI Status' as shown in the figure below.

PRI 1 OK 27 of 30		PRI 2 OK 5 of 30		PRI 3 Red Alarm 0 of 0		PRI 4 Red Alarm 0 of 0	
1:	idle	1:	idle	1:	idle	1:	idle
2:	idle	2:	idle	2:	idle	2:	idle
3:	idle	3:	idle	3:	idle	3:	idle
4:	idle	4:	idle	4:	idle	4:	idle
5:	idle	5:	idle	5:	idle	5:	idle
6:	idle	6:	active 67828685	6:	idle	6:	idle
7:	idle	7:	active 67828685	7:	idle	7:	idle
8:	idle	8:	active 67828685	8:	idle	8:	idle
9:	idle	9:	active 67828685	9:	idle	9:	idle
10:	idle	10:	active 67828685	10:	idle	10:	idle
11:	idle	11:	active 67828685	11:	idle	11:	idle
12:	idle	12:	active 67828664	12:	idle	12:	idle
13:	idle	13:	active 67828664	13:	idle	13:	idle
14:	idle	14:	active 67828664	14:	idle	14:	idle
15:	idle	15:	active 67828664	15:	idle	15:	idle
16:	D-Channel	16:	D-Channel	16:	D-Channel	16:	D-Channel
17:	idle	17:	active 67828664	17:	idle	17:	idle
18:	idle	18:	active 67828664	18:	idle	18:	idle
19:	idle	19:	active 67828614	19:	idle	19:	idle
20:	idle	20:	active 67828614	20:	idle	20:	idle
21:	idle	21:	active 067828618	21:	idle	21:	idle
22:	idle	22:	active 067828618	22:	idle	22:	idle
23:	idle	23:	active 067828615	23:	idle	23:	idle
24:	idle	24:	active 067828615	24:	idle	24:	idle
25:	idle	25:	active 067828615	25:	idle	25:	idle
26:	idle	26:	active 067828615	26:	idle	26:	idle
27:	idle	27:	active 067828615	27:	idle	27:	idle
28:	idle	28:	active 067126001	28:	idle	28:	idle
29:	active 067828618	29:	active 067126001	29:	idle	29:	idle
30:	active 067828615	30:	active 067126000	30:	idle	30:	idle
31:	active 067126000	31:	active 67828674	31:	idle	31:	idle

If a site has been disconnected, the cause code can be viewed by pressing the link next to the PRI channel that was disconnected. See next page for a cause code example.

Example of Location Codes:

A videoconferencing endpoint was connected to channel 1 and 2 on PRI Line 1. The status shows disconnected with the cause code 2 : 16. The first part (2) is the Cause Location code and describes the origin of the cause code.



Location Code 0 - User

Location Code 1 - Private network serving the local user

Note; depending on the location of the users, the local public network and remote public network may be the same network.

Location Code 2 - Public network serving the local user

Note; depending on the location of the users, the local public network and remote public network may be the same network.

Example of ISDN Cause Codes:

The second part (16) describes the reason for the disconnect. In this case, a normal call clearing.



Cause No. 16 - Normal Call Clearing

This cause indicates that the call is being cleared because one of the users involved in the call has requested that the call be cleared.

Cause No. 16/4 or 17 - User Busy

This cause is used when the called user has indicated the inability to accept another call. This cause code may be generated by the called user or by the network. Please note that the use equipment is compatible with the call.

Cause No. 16/3 or 18 - No User Responding

This cause is used when a called party does not respond to a call establishment message with either an alerting or connect indication within the prescribed period of time allocated (in Q.931 by the expiry of either time T303 or T310).

PRI Alarms

Red Alarm or Loss of signal (LOS) indicates that there is no signal and thus no framing info received. The same effect will be obtained by pulling out the PRI cable. This may also be caused by a broken connector in the receive (RX) part of the cable.

Yellow Alarm or Remote Alarm Indicator (RAI) means that the gateway is receiving framing info, but in this framing info the other side tells the gateway that it is not reading the gateway's transmitted framing info. Typically, this may be a broken connector in the transmit (TX) part of the PRI cable. This could also indicate weak or noisy signal in the transmit (TX) part of the PRI cable.

H.323 Status

To view H.323 gatekeeper status, open 'H.323 Status' as shown in the figure below.

The screenshot shows the 'H.323 Status' page. The top navigation bar includes 'Overview', 'Phone Book', 'System Status' (which is selected), 'System Configuration', and 'Gateway Configuration'. Below the navigation is a breadcrumb trail: 'PRI Status' > 'H.323 Status' > 'System Information' > 'Available Resources'. The main content area is titled 'H.323 Status' and contains a table with two rows. The first row has a 'Status' header. The second row shows 'GW IP Address' as 10.0.0.180 and 'H.323 Gatekeeper Status' as 'Registered 10.0.0.30:1719'. To the right of the table is a 'NOTE' box with the text: 'IT IS NOT POSSIBLE TO USE THIS IP ADDRESS TO PLACE CALLS THROUGH THE GATEWAY.'

GW IP Address

Shows the IP address of the gateway.

H.323 Gatekeeper Status

Shows status and IP address of the Gatekeeper, the gateway is registered to. 'Inactive' means the gateway is not registered to a gatekeeper.

'Registering' means the gateway is having problems registering with selected gatekeeper.

System Information

To view gateway information, open 'System Information' as shown in the figure below. This page provides information on installed software and hardware.

The screenshot shows the 'System Information' page. The top navigation bar includes 'Overview', 'Phone Book', 'System Status' (selected), 'System Configuration', and 'Gateway Configuration'. Below the navigation is a breadcrumb trail: 'PRI Status' > 'H.323 Status' > 'System Information' > 'Available Resources'. The main content area is titled 'System Information' and contains a table with various system parameters. The table has a header row 'Information' and several data rows. The data includes: System Name: TANDBERG-GW, Software Release: G1.0, Software Options: 4 Mbps ISDN, Release Date: 2003-07-01, Boot Software Release: Rev. 1.1, Hardware Serial Number: 00182422, Main Board: 100930 rev. 03, Board Temperature: 37° C / 98° F, Expansion Board: 100940 rev. 02, MAC Address: 00:50:60:00:9B:63, and LAN Speed: 100 mbit/s, full duplex.

Available Resources

To view available resources on the gateway, open 'Available Resources' as shown in the figure below.

Available Resources

Resource	Available	Total
Video Calls	2	8
Telephone Calls	7	8
ISDN Channels	32	60
Total Bandwidth	4215 kbps	7680 kbps
System Load	10 %	100 %

Configure the Gateway

To configure the gateway, open ‘System Configuration’ and ‘Gateway Configuration’. Shown in the figure below is the ‘System Configuration’.



System Configuration

PRI Configuration

To configure the PRI, select ‘System Configure - PRI’ as shown in the figure below.

PRI Configuration

Configuration				
PRI Protocol	ETSI (Euro ISDN)			
Parallel Dial	<input checked="" type="checkbox"/>			
Sending Complete	<input type="checkbox"/>			
Send Own Number	<input checked="" type="checkbox"/>			
NSF Code Video				
NSF Code Telephony				
PRI Trunk Grouping	<input checked="" type="checkbox"/>			

Interface Configuration	PRI 1	PRI 2	PRI 3	PRI 4
Number Range Start	4000			
Number Range Stop (inclusive)	4020			
PRI CRC-4	On	On	Off	Off
T1 Cable Length	0-133ft	0-133ft	0-133ft	0-133ft

Channel Hunting				
Max Channels	30	30	23	23
Low Channel	1	1	1	1
High Channel	31	31	23	23
Search	High	High	High	High

Save

PRI Protocol

Select between the following PRI protocols:

- ETSI (Euro ISDN)
- National ISDN
- AT&T Custom

All PRI lines must use the same PRI Protocol.

Parallel Dial

On Channels will be dialed and connected in parallel when setting up a BONDING call.

Off Channels will be dialed sequentially, which may increase call setup time.

Sending Complete

On: The system will send the ISDN message information element “Sending Complete”.

Off: The system will not send “Sending Complete”.

Send Own Number

On The system will send its own number to the far end

Off The system will not send its own number to the far end, but please note that the network may still send your number to the far end.

PRI Trunk Grouping

When Trunk Grouping is enabled, PRI 2, 3 and 4 will use the same number range as specified for PRI 1.

NSF - Non Standard Facility

Your network provider may require a service selection in your ISDN configuration. Enter the Service code here.

Valid NSF service codes are from 1 to 31. Enter 0 to disable NSF service codes.

NSF Example:

AT&T offers several digital switched services. These include SDN with service code 1 and ACCUNET with service code 6.

<u>Example:</u>		<u>Service profiles for Sprint:</u>	
Below is a list of common service profiles. As these profiles may change, contact your service provider to get the correct profile.		<u>NSF Service</u>	
NSF Service		Reserved	0
Disable	0	Private	1
SDN (including GSDN)	1	Inwatts	2
Megacom 800	2	Outwatts	3
Megacom	3	FX	4
Accunet	6	TieTrunk	5
Long Distance	7	<u>Service profiles for MCI:</u>	
International 800	8	NSF Service	
MultiQuest	16	VNET/Vision	1
Call Redirection Service	23	800	2
		PRISM1, PRISMII, WATS	3
		900	4
		DAL	5

Save

When all settings are entered, please press the 'Save' - button to affect the new settings

Interface Configuration

This section configures each of the four PRI interfaces individually. There is one column for each PRI Interface. However, if PRI Trunk Grouping is enabled, the number range for PRI 1 will also apply for PRI 2, 3 and 4.

Number Range Start

The PRI lines connected to the gateway should have at least one number each, to allow dial in from ISDN.

In order for the gateway to handle two or more simultaneous incoming ISDN calls for the ISDN services IVR and TCS-4, it is required to define a PRI number range in addition to the IVR number.

If the PRI line has a range of numbers, the start number must be entered here. Please contact your IT manager to obtain these numbers.

NOTE THE QUANTITY OF SIMULTANEOUS INCOMING ISDN CALLS IS DEFINED AS PRI NUMBER RANGE MINUS IVR AND HOTLINE NUMBER (IF USED).

It is only necessary to enter the digits indicating the range. If the range is 67124000 to 67125000, then just enter 4000. Maximum amount of digits is 24.

Number Range Stop

Here is where the last number in the PRI number range is entered. If the range is 67124000 to 67125000, then just enter 5000.

PRI CRC-4

Used for most E1-PRI configurations. If your network equipment does not support this feature, set PRI CRC-4 to Off.

T1 Cable Length

Specifies the cable length between the gateway and the CSU for each of the PRI lines (only valid for T1 networks). Possible values are:

- 0 to 133 feet
- 133 to 266 feet
- 266 to 399 feet
- 399 to 533 feet
- 533 to 655 feet

Channel Hunting

Should be used if your PRI is limited e.g.:

- If only channels 1 through 18 are digital, and the rest are analogue. Use Low = 1, High = 18.
- If you have a PRI with only 12 channels. Set Max channel to 12.

Max Channels

Indicates the maximum number of B-channels the system is allowed to use for each of the PRI-interfaces. For E1 (ETSI/Euro ISDN), the maximum number of channels is 30. For T1 (National ISDN and AT&T Custom), the maximum number of channels is 23.

Low Channel

Indicates the lowest numbered E1/T1 B-channel the system is allowed to use for each PRI-line when selecting channels for outgoing calls.

High Channel

Indicates the highest numbered E1/T1 B-channel the system is allowed to use for each PRI-line when selecting channels for outgoing calls.

Search

Specifies where the system will start searching for available B-channels for each PRI-line. If 'Search' is set to 'High', the system will start to search for available B-channels at the highest numbered B-channel. If 'Search' is set to 'Low', the system will start searching for available B-channels at the lowest numbered B-channel.

IP Configuration

To configure the IP settings on the gateway, open 'IP' as shown in the figure below.

The screenshot shows the 'IP Configuration' page of the TANDBERG Gateway. The 'Configuration' section contains the following fields:

IP Address Assignment	Static
IP Ethernet Speed	Auto
Static IP Address	10 0 0 180
Static IP Subnet Mask	255 0 0 0
Static IP Gateway	10 0 0 1

A note on the right side of the page states: "For the settings to take effect (except the 'IP Ethernet Speed' setting), the TANDBERG GW has to be restarted after pressing 'Save'." At the bottom of the page are two buttons: "Save" and "Restart".

Configuration

IP Address Assignment

DHCP: Dynamic Host Configuration Protocol can be selected when a DHCP server is present.

Static IP Address, Static IP Subnet Mask and Static IP Gateway are ignored because these parameters are assigned by the DHCP server.

Static: If Static assignment is used, the gateway's IP-address and IP-subnet mask must be specified in the IP-address field.

IP Ethernet Speed

Auto The gateway will automatically detect the speed/duplex on the LAN.

10Half The gateway will connect to the LAN using 10 Mbps/Half Duplex.

10Full The gateway will connect to the LAN using 10 Mbps/Full Duplex.

100Half The gateway will connect to the LAN using 100 Mbps/Half Duplex.

100Full The gateway will connect to the LAN using 100 Mbps/Full Duplex.

Static IP Address

The Static IP Address defines the network address of the gateway. This address is only used in static mode. Your LAN administrator will provide you with the correct address for this field.

Static IP Subnet Mask

The Static IP Subnet Mask defines the type of network. Your LAN administrator will provide the correct value for this field.

Static IP Gateway

The Static IP Gateway defines the Gateway address. Your LAN administrator will provide the correct value for this field.

Save

When ready to store the new settings, press '**Save**'. These settings will take effect when the system is restarted.

Restart

This button will restart the gateway. Any changes made in the IP Configuration will then take effect.

H.323 Configuration

To dial out from IP to ISDN, through the gateway, requires the use of H.323 numbers (E.164 aliases). This means that the gateway must be registered to a Gatekeeper.

The screenshot shows the 'H.323 Configuration' page. At the top, there are tabs for Overview, Phone Book, System Status, System Configuration, and Gateway Configuration. Below the tabs, a breadcrumb navigation shows PRI • IP • H.323 • Dataport • SNMP • Misc • Upgrade. The main content area is titled 'H.323 Configuration'. It contains several configuration sections: 'H.323 Configuration' (Gatekeeper set to 'Manual', IP 10.0.0.30, Status Registered 10.0.0.30:1719), 'Quality of Service' (QoS Mode set to 'Precedence'), and 'QoS Mode Configuration' (a table with columns 'Type of Service' and 'Precedence/DiffServ' for Telephone Calls, Video Calls, Signaling, Video Calls, Audio, Video Calls, Video, and Video Calls, Data). A 'Save' button is located at the bottom of the configuration area.

TIP **H.323 GATEKEEPER STATUS**
SHOWS CURRENT STATUS OF
GATEKEEPER REGISTRATION.

H.323 Configuration

Gatekeeper

Manual Enables the gateway to register to a Gatekeeper. The Gatekeeper IP Address must also be filled in. When registered, the H.323 Gatekeeper Status shows Registered, Gatekeeper's IP address and what port used.

Problems with registration will be shown as 'Registering' and a Red alarm on the 'Overview' page.

Off Select Gatekeeper to 'Off' if the gateway should not register to any Gatekeeper. The H.323 Gatekeeper Status window will show 'Inactive'.

Gatekeeper IP Address

Enter the Gatekeeper IP Address that the gateway should register to.

Quality of Service

The network must support Quality of Service for these settings to work.

RSVP

Off No RSVP Quality of Service is initiated for any connections.

Auto Resource Reservation Protocol enables the gateway to request the optimal amount of bandwidth for the duration of an IP video call.

QoS Mode

Off No QoS is used

Diffserv Diffserv QoS method is used. Please see 'QoS Mode Configuration' for details.

Precedence IP Precedence QoS method is used. Please see 'QoS Mode Configuration' for details.

QoS Mode Configuration

Diffserv is used to define which priority audio, video, data and signaling packets should have in an IP network. The priority ranges from 0 to 63 for each type of packets.

Precedence is used to define which priority audio, video, data and signaling should have in the network. The higher the number, the higher the priority. The priority ranges from 0 (off) - 7 for each type of packets.

In addition to Precedence, Type of Service can be used and enables the user to define what type of connection that should be chosen for the IP traffic. Helps a router select a routing path when multiple paths are available.

Off Service not active.

Min. Delay Will choose a route where minimum delay is prioritized.

Max. Throughput Will choose the route with highest bandwidth.

Max. Reliability Will choose the route where minimum packet loss is prioritized.

Min. Cost Will choose the cheapest connection available.

Press '**Save**' to activate the new settings.

Dataport Configuration

To configure the Data port on the gateway, open 'Dataport' as shown in the figure below.

NOTE WHEN CONNECTING TO A PC
THE CONNECTING CABLE MUST
BE A STRAIGHT THROUGH
RS232 CABLE.

Dataport Configuration is used to configure the RS 232 serial port on the gateway. If you want to connect a PC to the dataport, you must ensure that the PC and the gateway are identically configured.

Configuration

Baudrate

Possible values are: 1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400 bps 56600 bps and 115200 bps.

Parity

Select 'None', 'Odd' or 'Even'.

NOTE THERE ARE NO HARDWARE OR SOFTWARE
HANDSHAKE OPTIONS. MAKE SURE THE
PC HANDSHAKING IS TURNED **OFF**.

Databits

Select 7 or 8 databits.

Stopbits

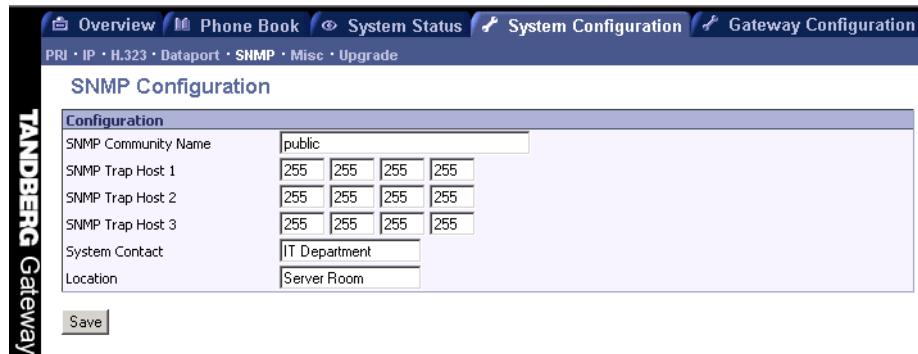
Select 1 or 2 stopbits.

Save

Press '**Save**' to activate the new settings.

SNMP Configuration

SNMP (Simple Network Management Protocol) is used for monitoring and configuring different units in a network. The gateway's **SNMP Agent** responds to requests from **SNMP Managers** (a PC program etc.). **SNMP traps** are generated by the agent to inform the manager about important events.



The screenshot shows the 'SNMP Configuration' page within the 'System Configuration' section of the TANDBERG Gateway. The configuration fields are as follows:

Setting	Value
SNMP Community Name	public
SNMP Trap Host 1	255 255 255 255
SNMP Trap Host 2	255 255 255 255
SNMP Trap Host 3	255 255 255 255
System Contact	IT Department
Location	Server Room

A 'Save' button is located at the bottom left of the configuration area.

NOTE THE SNMP COMMUNITY NAME IS CASE SENSITIVE.

Configuration

SNMP Community Name

SNMP Community names are used to authenticate SNMP requests. SNMP requests must have this 'password' in order to receive a response from the SNMP agent in the gateway.

SNMP Trap Host (1, 2 and 3)

Identifies the IP-address of the SNMP manager. Up to three different SNMP Trap Hosts can be defined. Your LAN administrator should provide the correct values for these fields.

System Contact

Used to identify the system contact via SNMP tools such as HPOpenView or TANDBERG Management Suite.

Location

Used to identify system location via SNMP tools such as HPOpenView or TANDBERG Management Suite.

Save

Press '**Save**' to activate the new settings.

Miscellaneous Configuration

To configure the miscellaneous settings on the gateway, open 'Misc' as shown in the figure below.

The screenshot shows the 'Miscellaneous Configuration' page of the TANDBERG Gateway. The 'System Name' is set to 'TANDBERG GW'. Under 'Services', 'FTP Service', 'Telnet Service', and 'HTTP Service' are checked. 'Telnet Challenge Service' is checked with port 57. 'HTTPS Service' and 'SNMP Service' are unchecked. A note states: 'A restart of the system is necessary for the services settings to take effect (after save)'. At the bottom are 'Save' and 'Restart' buttons.

Configuration

To change the system name of the gateway, enter the new system name in the '**System Name**'.

Password

To change the system password of the gateway, enter the new password in the '**New Administrator Password**'.

To delete the existing password, select '**Delete Password**'.

Services

The different IP services on the gateway - Telnet, Telnet Challenge, HTTP, HTTPS, SNMP and FTP can be independently disabled to prevent access to the system.

In addition, the SNMP Service Read Only/Traps Only will make it possible to read SNMP messages in addition to enable/disable SNMP.

SNMP Security alert

This function will notify any Management Application (such as TANDBERG Management Suite) if anyone tries to perform Remote Management on the gateway using an illegal password. The Security alert that is sent to the Management Application will contain information about the IP address and the service (WEB, Telnet, FTP) being used for the attempt.

If TANDBERG Management Suite is used, email notifications or alarms about the attempt can be sent to specified persons.

Save

Press '**Save**' and then the '**Restart**'.

Software Upgrade

Software upgrade is where new software to the gateway can be installed from. It also shows current software version and the gateway's hardware serial number.

NOTE TO UPGRADE THE GATEWAY, A VALID RELEASE KEY AND SOFTWARE FILE IS REQUIRED. CONTACT YOUR TANDBERG REPRESENTATIVE FOR MORE INFO.

System Information

Software Version	Shows the currently installed Software version.
Hardware Serial Number	This unique identifier number for the gateway must be provided when ordering Software Upgrade.
Installed Options	Shows the currently installed Options.
Current Option Key	Shows the current Option Key.

Software Option

Bandwidth Option Key	Enter the bandwidth option key in the Key field and press 'Enable Option'. The gateway will validate the key, and if valid a restart would be requested for the new bandwidth option to take effect.
-----------------------------	--

Install Software

Release Key	Enter the release key in the Key field and press 'Install Software'. You will be presented with a new page where you select the software package file to upload.
--------------------	--

File Management

The File Management allows viewing or changing of pictures and sounds shown to the caller when connecting to the gateway.

File	Type	Upload
Pictures		
Call Proceeding	System Default	Browse... Upload
Extension Enquire Screen	System Default	Browse... Upload
Downspeeding In Progress	System Default	Browse... Upload
Sounds		
Call Proceeding Sound	System Default	Browse... Upload
Extension Enquire Sound	System Default	Browse... Upload
System Settings		
System Parameters	Special File	Browse... Upload
Directory	Special File	Browse... Upload
Legal File Formats		
Pictures	JPEG (.jpg) files that are not grayscale and non-progressive coded. Recommended maximum size is 352x288.	
Sounds	16bit 8Khz mono Wave (.wav) file.	
System Settings	TANDBERG parameter files.	

NOTE PLEASE REFER TO THE 'LEGAL FILE TYPES' FIELD AT THE BOTTOM OF THE PAGE FOR INFORMATION ABOUT LEGAL FILE FORMATS.

To view/hear the currently installed files, press the name of the 'File' on the left side of the window. The file will then be shown/played. At the bottom of the page, custom file requirements are listed for each of the file-types.

The following can be specified:

- Gateway Call Proceeding Picture
- Gateway Extension Enquire Screen Picture
- Downspeeding In Progress Picture
- Gateway Call Proceeding Sound
- Gateway Extension Enquire Sound
- System Parameters
- Directory

To add a new file, press '**Browse...**' to find the file, and then press '**Upload**'.

For each of the customized files, a '**Delete**' button will be added in the '**Type**' column. By pressing '**Delete**', the default file will replace the custom file.

Pressing '**System Parameters**' allow you to do backup and restore the settings on the gateway.

Pressing '**Directory**' allow you to upload a Phone Book to the gateway. The Phone Book is used for the Call Transfer function.

ISDN Dial In Configuration

The ISDN Dial In Configuration allows you to configure and enable the ISDN services used to access your IP endpoints.

ISDN Dial In Configuration

Configuration

Extension Dial In	IVR + TCS-4
Dial In Number	4000
Dial In Max. Bandwidth	768 kbps

Hotline

ISDN Number	4001
H.323 E.164 Alias	99844
Max. Bandwidth	768 kbps

Direct Inwards Dialing

Enabled	<input checked="" type="checkbox"/>
No. Significant Digits	4
Prefix (E.164)	9
Max. Bandwidth	768 kbps

Save

Configuration

Extension Dial In

Select between Off, IVR, IVR + TCS-4:

Off	Incoming calls will not be allowed, except those specified under Hotline and Direct Inwards Dialing.
IVR	Incoming calls will be prompt with the Gateway Extension Enquire Screen and the Gateway Extension Enquire Sound, except those specified under Hotline and Direct Inwards Dialing.
IVR + TCS-4	Incoming calls will be prompt with the Gateway Extension Enquire Screen and the Gateway Extension Enquire Sound, except those specified under Hotline and Direct Inwards Dialing. In addition, incoming calls with the TCS-4 destination specified, will be routed directly to the destination.

Dial In Number

All incoming calls received on this number will use the IVR/TCS-4 service.

Dial In Max. Bandwidth

The call rate (bandwidth) for incoming calls will automatically be determined by the endpoint. However, you can use this setting to restrict the call rate for incoming DID/TCS-4 calls.

Calls above the Dial In Max. Bandwidth will be downspeeded to the call rate specified in Dial In Max. Bandwidth.

NOTE REQUIRE SUPPORT OF DOWNSPEEDING ON THE ENDPOINT.

Calls below the Dial In Max. Bandwidth will be connected at the requested call rate.

Hotline

ISDN Number

All incoming calls received on this number will be forwarded to the IP endpoint specified in 'H.323 E.164 Alias' field.

H.323 E.164 Alias

All incoming calls received to the Hotline ISDN number will be forwarded to this H.323 Alias.

Max. Bandwidth

The call rate for incoming calls will automatically be determined by the endpoint. However, you can use this setting to restrict the call rate for incoming Hotline calls.

Calls above the Max. Bandwidth will be downspeeded to the call rate specified in Max. Bandwidth.

NOTE REQUIRE SUPPORT OF DOWNSPEEDING ON THE ENDPOINT.

Calls below the Max. Bandwidth will be connected at the requested call rate.

Direct Inwards Dialing

Enabled

On All incoming calls within the PRI number range will be forwarded to an IP/H.323 endpoint except calls received to the IVR and Hotline ISDN numbers.

Off Direct Inwards Dialing is disabled.

No. Significant Digits

Specify the number of significant digits in the PRI Number range that should be used to generate an H.323 Alias (IP number).

Example:

- Your ISDN PRI number range is from 67124000 to 67124050.
- You want your IP endpoints to have the numbers (H.323 Alias) in the range 4000 - 4050.
- Set 'No. Significant Digits' to 4.
- To call an IP endpoint with H.323 Alias 4020 from ISDN, dial the ISDN number 67124020.

Prefix (E.164)

When receiving an incoming call, a number prefix can be added to the range of digits specified under 'No. Significant Digits'. This is useful where the IP endpoints also use H.323 Prefix for placing calls on IP.

Example:

- Your ISDN PRI number range is from 67124000 to 67124050.
- You want your IP endpoints to have the numbers (H.323 Alias) in the range 94000 - 94050.
- In the ISDN Dial In Configuration, set 'No. Significant Digits' to 4 and 'Prefix (E.164)' to 9.
- To call an IP endpoint with H.323 Alias 94020 from ISDN, dial the ISDN number 67124020.

Max. Bandwidth

The call rate for incoming calls will automatically be determined by the endpoint. However, you can use this setting to restrict the call rate for Direct Inwards Dialing calls.

Calls above the Max. Bandwidth will be downspeeded to the call rate specified in Max. Bandwidth.

NOTE REQUIRE SUPPORT OF DOWNSPEEDING ON THE ENDPOINT.

Calls below the Max. Bandwidth will be connected at the requested call rate.

H.323 Services

H.323 Service prefixes are used for IP endpoints to access the ISDN network. Up to twenty prefixes can be defined, but we recommend using one single prefix for simplicity.

The screenshot shows the 'H.323 Services' configuration page. At the top, there is a navigation bar with links to Overview, Phone Book, System Status, System Configuration, and Gateway Configuration. Below the navigation bar, the page title is 'H.323 Services'. The main content area contains a table with columns: Description, Service, Max. Rate, ISDN Prefix, and Restrict. There are two entries: 'Telephone calls' (Service 1, Max. Rate 31ph, ISDN Prefix Off, Restrict Off) and 'Video call' (Service 0, Max. Rate 384, ISDN Prefix Off, Restrict Off). To the right of the table is a 'Entry' panel with fields for Description, Service, Max. Rate (set to 768 kbps), ISDN Prefix, Restrict (set to Off), and buttons for Create New, Save Changes, and Clear. At the bottom of the page is a 'Configuration' section with a 'Signal Busy on Load' slider set to 70% and a 'Save' button.

Default H.323 Services are '0' for Video calls and '1' for Telephone calls. Should other H.323 Services be required, they can be entered here.

Description

Used to identify the H.323 Service.

Service

Specifies the gateway service prefix that all IP endpoints must use when dialing from IP to ISDN. There can be up to 20 different H.323 Services.

If you have multiple gateways they should use the same Service prefixes. Then it can be useful to use "H.323 Load Balance" to balance resource usage between the gateways.

TIP

IF YOU HAVE PROBLEMS DIALING A CONFIGURED H.323 SERVICE, CHECK THAT THE SERVICE PREFIX IS REGISTERED ON THE GATEKEEPER AS A GATEWAY SERVICE. IT COULD ALREADY BE REGISTERED AS ANOTHER SERVICE.

Max. Rate

The call rate for outgoing calls will automatically be determined by the call rate used by the endpoint. Use this setting to restrict the call rate for outgoing calls.

Possible configurations are Telephone, 64 kbps, 128 kbps, 192 kbps, 256 kbps, 320 kbps, 384 kbps, 512 kbps, 768 kbps, 1152 kbps, 1472 kbps and 1920 kbps.

We recommend having one service prefix for Video and one for Telephone calls unless Q.931 Speech signaling on IP/H.323 is supported by the endpoint.

ISDN Prefix

Can be used as an option to pick specific carriers or “outside”-lines and is automatically added to the ISDN number.

Restrict

Select ‘Restrict’ if the H.323 Service always should force restricted (56k) ISDN calls. If ‘Restrict’ is not selected, the gateway will dial an unrestricted call and downspeed to 56 kbps if necessary.

Create New

When Description, Service, Max. Rate, ISDN Prefix, Restrict (56k) has been entered, press ‘**Create New**’ to activate the new H.323 Service.

Save Changes

To modify a H.323 Service, click on it, change the necessary settings and press ‘**Save Changes**’ to activate the new settings.

Clear

Press ‘**Clear**’ to empty any entries done under Entry.

Save

Press ‘**Save**’ to activate the new settings.

Signal Busy on Load

When the Resource Usage reaches the “Busy on Load”-limit, the gateway will try to route outgoing IP/H.323 calls to other gateways. This is done to maintain availability for incoming ISDN calls when using multiple gateways.

Value can be set from 0% to 100%.

Press ‘**Save**’ to activate the new settings.

Gateway Features

Experience has shown that new standardized features might cause interoperability problems between legacy video conferencing products. If you disable features on this page, the gateway can be used as a filter to ensure interoperability with legacy products.

To configure the gateway features, open 'Gateway Configuration - Features' as shown in the figure below.



Configuration	
Natural Video	<input checked="" type="checkbox"/>
Custom Video Formats	<input checked="" type="checkbox"/>
Duo Stream (Duo Video / P+C)	<input checked="" type="checkbox"/>
Encryption	<input checked="" type="checkbox"/>
H.264	<input checked="" type="checkbox"/>

Save

Natural Video

Allows video formats and capabilities such as interlaced video (iCIF/iSIF) to be transmitted through the gateway. When disabled no interlaced video capabilities will be transmitted.

Custom Video Formats

Allows H.263 custom video formats and capabilities such as SIF, 4SIF and VGA resolution to be transmitted through the gateway. When disabled no H.263 custom video formats or capabilities will be transmitted.

Duo Stream (Duo Video / P+C)

Allows Duo Video and Polycom People+Content™ to be transmitted through the gateway. When disabled no Duo Video or P+C capabilities will be transmitted.

Encryption

When encryption is enabled, the gateway will allow DES and AES 128 encrypted conferences to take place. The gateway will only encrypt calls if both sides support encryption.

NOTE WHEN 'ENCRYPTION' IS ENABLED, THE CAPACITY OF THE GATEWAY MAY BE REDUCED. SEE APPENDIX 3 FOR MORE INFO.

H.264

Allows H.264 video capabilities to be transmitted through the gateway. When disabled no H.264 video capabilities will be transmitted.

Save

Press '**Save**' to activate the new settings.

Appendices

Appendix 1: Using the file system

It is possible to access a file system within the TANDBERG GATEWAY by using ftp:

DOS-window: ftp <IP-address of gateway>, or

Web-browser: ftp:// <IP-address of gateway>

Description of the different files

all.prm - all settings in the system (including directory)

dir.prm - directory entries

event.log - logs fault situations etc.

sw.pkg - the system software

Description of the different folders

user - a folder to be used for custom files, images and audio files etc.

What can be done by using the file system?

- upload of custom images
- upload software

Appendix 2: Declaration of Conformity

EC DECLARATION OF CONFORMITY

MANUFACTURER: TANDBERG

TYPE NUMBER: TTC2-01

MODEL NUMBER: TANDBERG GW

DESCRIPTION: Video Conferencing Equipment

DIRECTIVES: LVD 73/23/EEC

This equipment
complies with.
EMC 89/336/EEC
R&TTE 99/5/EEC

HARMONISED STANDARDS: EN 60950 (1999) 3rd edition

Applied in order to verify
compliance with directives.
EN 55022 : 1994, A1/A2
EN 55024 : 1998
EN 61000-3-2 : 1995 A1/A2
EN 61000-3-3 : 1995
TBR4 Layer 1, 2 and 3

TEST REPORTS/

CERTIFICATES ISSUED BY:

LVD (Nemko AS)

Report/Certificates No.:

200214280

EMC (Nemko AS)

200218144

R&TTE (Comlab)

2002/02826/3

2002/02826/4

TECHNICAL CONSTRUCTION

FILE NO.: D13177

YEAR WHICH THE
CE-MARK WAS AFFIXED: 2003

AUTHORISED REPRESENTATIVE

Date of issue

NAME: PER HAKOGSTAD
TITLE : Executive Vice President

30.05.2003

Appendix 3: Capacity

Gateway capacity - calculation

The total capacity in the gateway is defined by the following rules:

- 1) A maximum of 8 video calls and 8 telephone calls.
- 2) Software version defines maximum ISDN bandwidth:
 - 2 Mbps -> Maximum ISDN bandwidth is 1920 kbps (30x64 kbps).
 - 4 Mbps -> Maximum ISDN bandwidth is 3840 kbps (60x64 kbps).
- 3) In addition, each call has a weight depending on bandwidth/encryption:

Bandwidth	Teleph.	64	128	192	256	320	384	512	768	1152	1472	1920
Non-encr.	22	74	80	82	84	88	92	108	124	160	176	220
Encrypted	N/A	106	118	120	122	136	146	168	222	N/A	N/A	N/A

The sum of the call weights cannot exceed 845 and max. bandwidth. Users will be prevented from setting up calls that exceeds these limits.

Example (4 Mbps version):

If the gateway has made 3 calls at 768, 2 calls at 384, and 2 encrypted calls at 192 the calculation will be:
 $3 \times 124 + 2 \times 92 + 2 \times 120 = 372 + 184 + 240 = 796$. Since 796 is less than 845 and the total bandwidth 3456 kbps, do not exceed the maximum bandwidth limit, this will be possible.

Gateway capacity – typical scenarios (4 Mbps version)

Below some typical capacity scenarios are listed. They can be derived by the calculation above:

Bandwidth	Non-encrypted	Encrypted
128 kbps	8+8*	7+0
256 kbps	8+7	6+5**
384 kbps	8+4	5+5
512 kbps	7+4	5+0
768 kbps	5+0	3+8
1472 kbps (1.5 Mbps)	2+8	N/A
1920 kbps (2 Mbps)	2+0	N/A

* 8+8 indicates 8 video calls and 8 telephone calls.

** 6+5 indicates 6 encrypted video calls and 5 unencrypted telephone calls.

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